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UNCTAD WORK PROGRAMME ON THE DEVELOPMENT AND TRANSFER OF TECHNOLOGY AND PROPOSALS FOR FURTHER WORK

Activities of the Advisory Service on Transfer of Technology

Progress report by the UNCTAD secretariat

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INTRODUCTION

1. The Conference, in section II of its resolution 87 (IV), on strengthening the technological capacity of developing countries, agreed that the necessary institutional basis to enable UNCTAD to meet the responsibilities assigned to it in the area of technical and operational assistance needed to be established, and decided in that context to establish an Advisory Service on Transfer of Technology (ASTT). Conference resolutions 112 (V), in section II. C, and 143 (V), section III, deal with broad issues relating to technical and operational assistance in the field of technology. Committee resolutions 6 (II), 16 (III) and 17 (IV) provided guidance of a more detailed nature concerning work and activities of the ASTT. Progress reports to this effect were submitted to consecutive sessions of the Committee in the context of the overall work programme of UNCTAD in the field of technology, supplemented by reports on technical and operational assistance provided by the Advisory Service on Transfer of Technology. 1/

2. Trade and Development Board resolution 231 (XXII) requested the main Committees to review regularly the elaboration of their work programmes and the implementation of their decisions. The pertinent report of the secretariat (TD/B/C.6/137) reflects the work of UNCTAD, including that of the ASTT, in the field of technology. The present addendum was prepared in response to paragraph 2 of Trade and Development Board resolution 308 (XXX), which requests the Secretary-General of UNCTAD to continue to provide information of a detailed nature on the activities of the ASTT. It complements the information already contained in the main document (TD/B/C.6/137), and reflects the progress made in implementing Board resolution 308 (XXX) as a whole as it refers to activities, priority areas for assistance and resources needed in order to efficiently meet the increasing requirements of developing countries.

3. The elements in paragraph 2 of Board resolution 308 (XXX), together with the views expressed at the Committee's fifth session and at the Board's thirtieth session, have been most valuable in shaping the present progress report. Chapter I contains an overview of the nature and scope of activities. Chapter II describes advisory services, backstopping and co-operation activities at various levels, with specific information on countries and institutions with which ASTT has co-operated, and the projects and programmes in which it has participated. Chapter III describes the various methods through which ASTT has contributed to the development of human resources and skills of personnel from developing countries. Chapter IV provides a full picture of various diagnostic analyses, operational tools and training materials whose main purpose is to assist developing countries in dealing with technology issues. Chapter V provides an outlook based on ongoing work, problems and expectations.

Chapter I

THE NATURE AND SCOPE OF ACTIVITIES: AN OVERVIEW

4. In line with the various mandates given to it, the ASTT has gradually evolved a broad spectrum of substantive areas of concern, functional activities, methods of co-operation, financing and implementation. These are briefly taken up below.

A. Areas of concern

5. The ASTT constitutes an integral component of UNCTAD's work programme in the field of technology. Its work is organized under four headings respectively entitled: (1) institutional infrastructures; (2) formulation and implementation of strategies, plans and policies; (3) sectors of critical importance; and, (4) training services and information exchange. In March 1985, the Trade and Development Board, in resolution 308 (XXX), identified the substantive areas of priority for assistance to developing countries in the following terms "(a) the formulation and implementation of policies, strategies, plans, laws, regulations, procedures, mechanisms and institutional structures aiming at the promotion of the acquisition, transfer and development of technology for the technological transformation of developing countries; (b) the effective utilization of technologies in the public domain; (c) the formulation of strategies for the technological development of sectors of importance to individual developing countries and in devising and enhancing new mechanisms and modalities for co-operation among developing countries in such sectors; (d) the organization of training programmes and the preparation of appropriate operational tools, such as handbooks, manuals and guidelines; (e) the establishment of efficient interregional linkages and co-operative arrangements among developing countries, bearing in mind other activities in UNCTAD concerning economic co-operation among developing countries; (f) the improvement of their access to and use of results from United Nations system-funded research and development".

6. The activities of the ASTT were focused on the above priority areas, which entail more work in three areas which are at a relatively early stage of evolution, namely (b), (e) and (f) above. Efforts are also being made to evolve better methods for identifying the overall and sectoral technological requirements associated with the development process. The preparation of a methodological manual/handbook for technology planners has already furthered this process of conceptualization and systematization, but efforts in this direction need to be continued.

7. While priority areas for assistance are substantively or topically defined, requests and requirements of developing countries vary widely. There is no flat, across-the-board way of responding to these diverse needs. Great flexibility and adaptability is therefore called for in designing the work and carrying out various functional activities in order to meet these requirements in the most effective manner. Special attention is paid by the ASTT to the needs of the least developed countries in its activities.

B. Functional activities

8. There are five broad categories of functional activities, namely, (i) empirical, diagnostic and analytical work towards the preparation of documents and reports, including activities necessary to evolve systematic and methodological bases for meaningful assistance to be provided, (ii) advisory services, backstopping and co-operation activities whereby ASTT interacts with various counterparts and interested institutions/parties concerned in developing countries, as well as with experts and consultants, in the implementation of specific projects or programmes, (iii) activities aimed at the development of human resources and skills of personnel from developing countries, including training and information exchange relating to priority areas of concern to the ASTT, (iv) activities of a supportive nature, including the identification of assistance requirements, substantive design and formulation of projects and programmes, (v) co-operative activities, including substantive inputs or contributions to the work of various bodies or institutions dealing with technology issues, as well as focalizing joint activities for which UNCTAD is the lead agency in line with decision 1 (V) of the Intergovernmental Committee on Science and Technology for Development (ICSTD).

9. These functional activities constitute a systematic sequence over time (e.g. preparatory diagnostic work, leading into the design and formulation of a project for funding, followed by substantive backstopping of project implementation once funds are secured), and are mutually supportive (e.g. most country projects simultaneously provide for work of a diagnostic nature as well as for the training of personnel).

10. Major attention is devoted to planning and articulating these various activities in a rational way, ensuring the overall efficiency of operations, as well as their timeliness and utility in meeting the specific requests and requirements the countries concerned within the framework of international co-operation in the field of technology. The planning, organization and implementation of work is affected by numerous external and internal factors, ranging from the availability of funds or suitable resource persons right down to the availability of data or information required for diagnostic or analytical purposes. Each one is highly relevant and needs to be properly dealt with in order to ensure the quality of services, outputs or results. The diversity of financing and implementation methods for various projects or programmes has a strong incidence on the nature and timing of activities of the ASTT.

C. Co-operation, financing and implementation

11. The ASTT consists of a small core of professional staff 2/ which is to assist developing countries in matters relating to technology within the purview of UNCTAD. Consecutive resolutions 17 (IV) of the Committee in 1982, 143 (VI) of the Conference in 1983 and 308 (XXX) of the Board in 1985 have consistently called for the mobilization of resources by urging that the ASTT be provided with necessary resources to meet the increasing requirements of developing countries, and by inviting potential donors and funding institutions to finance projects and programmes of the ASTT.

12. Several methods and sources of financing, as well as modalities of implementation and execution have evolved over time. There are three broad categories, each with its own determinant features and impact on the activities of the ASTT, namely: (i) programmes/projects for which UNCTAD is the executing agency, comprising those dealing specifically with technology and focalized by ASTT, (e.g. Zimbabwe) and those for which other programmes of UNCTAD are responsible but may require specific inputs to be handled by ASTT (e.g. Nepal); (ii) programmes/projects for which UNCTAD acts as a co-operating agency, either with respect to another executing agency of the United Nations system (e.g. UNIDO), or with respect to Government executed projects (e.g. Ethiopia); and (iii) voluntary contributions to UNCTAD earmarked for diverse purposes falling within the purview of the ASTT, (e.g. a longer-term seminar programme with Finland and another one with the Islamic Development Bank; the provision of an expert on technology issues for Lesotho for one year by Finland; one for the provision of short-term consultants on technology and development perspectives in pharmaceuticals, and one towards the preparation of a methodological handbook, both by Sweden).

13. In carrying out its various interrelated project and programme activities, major efforts were made to articulate them in a systematic and rational way. Project documents and co-operation agreements define the respective roles of the parties concerned in implementing various activities, which need to be carried out in a timely fashion at mutually convenient dates. Problems of planning and scheduling were resolved by mutual consultations. Wherever possible, the countries, institutions or counterparts concerned were encouraged and guided to undertake as much advance preparation as possible within their own means. Again, wherever possible, field work was scheduled in conjunction with or around (either before or after) a fixed or firm event such as a seminar or a meeting being held in a particular region. Geographical proximity was a main factor in planning and scheduling of field work and missions, often entailing complex problems of timing for preparatory work as well as for counterpart arrangements. Interdivisional and intra-divisional co-operation and feedbacks were intensified making better use of resources and each others experiences. Co-operative actions with other organizations of the system and relevant institutions in developed and developing countries were intensified in an effort to derive maximum benefits in assisting developing countries in strengthening their capacity and accelerating their technological transformation.

14. Subsequent chapters of the present addendum describe in detail the various activities of the ASTT, supplementing the information provided in the main document (TD/B/C.6/137).

Chapter II

ADVISORY SERVICES, BACKSTOPPING AND CO-OPERATION ACTIVITIES

15. The present chapter provides information on advisory services, substantive backstopping and co-operation at the national, subregional, regional and interregional levels. It includes names of countries and institutions concerned, the timing, duration and financing of projects, the nature of assistance provided, together with an indication of results or present status of actions.

A. Co-operation with countries:

Argentina: Two weeks field work took place early in 1985, during which suggestions concerning the preparation of policy-oriented diagnostic analyses on techno-economic issues in the informatics sector were made. They were discussed at a series of seminars organized with the co-operation of universities and interested research institutes, which are following-up on this activity.

Burundi: Until mid-1985 UNCTAD acted as associated agency in a UNIDO-executed project. In this context, ASTT provided advice and training. Within a new Government executed project to be funded by UNFSSTD, UNCTAD will act as the co-operating agency. The project contemplates the design, formulation and implementation of policies promoting the transfer of technology to the country and the strengthening of its own technological capacity. Technology and development perspectives in various sectors, including food processing, as well as the training of personnel in dealing with techno-economic issues are of priority concern. The project is envisaged to start late in 1986.

Côte d'Ivoire: The Government has formally communicated its wish for closer co-operation and assistance in evolving appropriate policies for technology transfer and development. The ASTT is ready to advise in the design and formulation of a project, and is in the process of exploring modalities to this end.

Egypt: The Government of Egypt, through its Academy of Scientific Research and Technology, has requested relevant inputs from the ASTT to its training programmes and to its national network for technological development. The ASTT is co-operating in the design and formulation of a project concerning the utilization of technologies in the public domain, including the diffusion of R and D results originating from national institutions in the country. Various methods of project implementation are jointly being explored.

Ethiopia: Under a project funded by the UNDP-country programme which commenced in 1980, the ASTT substantively backstopped project activities aimed at the establishment of the Ethiopian Centre for Technology (ECT) which is now fully operational. The project was completed in December 1984 and a tripartite terminal report assessing project activities was prepared. This project has been followed by a government-executed project which calls on UNCTAD as a co-operating agency. The ASTT is to organize a national seminar on technology and development perspectives in the food processing sector in September 1986 and one on the capital goods sector at a later date based on the diagnostic reports prepared earlier.

Ghana: Co-operation dates back to 1983, when the ASTT provided preliminary advisory services on transfer, utilization and development of technology. A diagnostic report was prepared with the involvement of various institutions dealing with these issues in the country, including the National Council for Scientific Research and the Ghana Investment Centre. Working group meetings were organized in November 1985. A technical co-operation project was formulated for possible UNDP funding. The proposal aims, inter alia, at improving the mechanisms and channels for the acquisition and transfer of technology from both domestic and foreign sources, and at responding to the country's concern to make better use of R and D results and support services to the productive sector.

India: The ASTT is co-operating with the Government in evolving a project concerning channels, mechanisms and policies for the utilization or commercialization of technologies or results of applied R and D for productive purposes. If the necessary funding is secured, the ASTT may be expected to provide substantive backstopping to this project.

Indonesia: Advice and support, including a short field mission, have been provided in the course of 1985 with the objective of identifying co-operation requirements and helping develop a national project for improving the utilization/commercialization or productive application of technologies and results from public R and D activities.

Kenya: Advisory services were provided to the the National Council for Science and Technology (NCST), which acted as national focal point and counterpart to the ASTT. These services related to technology transfer issues and the roles to be played by the respective national institutions. The ASTT has also provided advice in the design and formulation of a country project on technology transfer, utilization and development. A working group meeting, with the participation of ASTT, took place late in 1985, to discuss modalities of implementing this project. The Government of Kenya is now submitting it to the UNDP for funding.

Lesotho: The Government in co-operation with ASTT has continued its efforts with a view to promoting relevant enterprises, enhancing the transfer of technology and strengthening the domestic technological capacity. An associated expert was fielded early in 1986 for one year in order to assist in implementing relevant measures. Funding was secured through an UNCTAD/Finnish project. The expert is substantively backstopped by the ASTT, in close consultation with UNCTAD's programme on least developed countries. A diagnostic analysis of technology issues in pharmaceuticals is also underway. 3/

Mali: Co-operation during the reporting period followed preliminary advisory services on technology transfer and development provided in 1983. A national seminar/workshop was held in 1984 with ILO as convenor and substantive contributions from UNCTAD. As a follow-up, working groups with all relevant institutions were organized late in 1985, with the direct participation of the ASTT. Advice was provided on the design and formulation of a project for assistance embodying an integrated course of action for technology. Possibilities of funding are being explored.

Nepal: Co-operation dates back to 1981 and several short-term field activities of the ASTT were funded from a UNDP project co-ordinated by UNCTAD's Programme on Least Developed countries. In the course of 1985 advice was provided on the design and formulation of a project, comprising various institutions, sectors and programmes. Working sessions with institutions concerned also took place during the same period. The project proposal is now being finalized by the Government and ASTT is expected to co-operate in its implementation.

Rwanda: Since 1984 renewed efforts have been made by the Government towards securing funding for a comprehensive project submitted earlier to UNDP/UNFSSTD. In reiterating its interest in this project, the Government has proposed that it be funded in sequential phases. The ASTT is expected to substantively backstop project activities.

Sierra Leone: Various forms of assistance, including substantive backstopping of technical reports and diagnostic analyses, advice and training/exchange programmes, were provided by means of a UNDP/UNFSSTD funded project. The project duration was June 1983 to November 1985. The main purpose of the project was to (i) promote policies and institutional mechanisms for mutually supportive actions by Government, R and D and the productive sector, (ii) identify technology requirements and development perspectives in three sectors of critical concern, e.g. food processing, metalworks and engineering, and pharmaceuticals; 4/ and (iii) the development of human resources. A tripartite report assessing these activities was prepared. Advice is currently being provided concerning the design and formulation of a follow-up project.

Trinidad and Tobago: Guidance was requested during 1985 concerning the establishment of a technological information system. The services of an expert were secured by ASTT for one week in order to provide the necessary advice in the field.

Togo: Co-operation was initiated in 1983, and followed up during the reporting period with advice in the design and formulation of a project document which the Government intends to submit to potential donors. The ASTT participated in a working group meeting on technology issues which took place in Togo late in 1985, at which the approach and modalities for possible project implementation were also discussed.

United Republic of Tanzania: During the reporting period, advice concerning the country's national science and technology plan and policies was provided largely on the basis of material made available directly to the ASTT at headquarters and through a short field mission early in 1985. It addressed several concerns, including: (i) making the country's scientific and R and D infrastructure more responsive to the needs of the productive sector, and (ii) seeking ways and means for meeting the technological requirements associated with the medium- and longer-term development process, improving institutional mechanisms for implementing science and technology policies.

Venezuela: Personnel of the Council for the Development of the Capital Goods Industry (CONDIBIECA) and UNDP have been in contact with ASTT with respect to the implemention of a project on capital goods executed by UNIDO. Diagnostic analyses regarding the utilization of the country's R and D potential in

support of the productive sector are being initiated by the Council for Science and Technology (CONICYT). The ASTT may be expected to provide co-operation to this end.

Zambia: Field work was carried out by the ASTT in the course of 1985 and a preliminary diagnostic report was prepared with the full co-operation of various institutions and the Government. A working group meeting took place thereafter with the participation of ASTT staff. Follow-up actions for strengthening Zambia's technological capacity are now being considered. The ASTT is expected to provide advice in the design, formulation and implementation of a project.

Zimbabwe: Co-operation was initiated in 1982. Current activities are within the framework of a UNDP-funded project which commenced early in 1986. It aims at the establishment and strengthening of the Division of Technology in the Ministry of Industry and Technology, as well as the evolution of an integrated framework for technology transfer, utilization and development. Diagnostic sectoral analyses have been initiated in capital goods, chemicals and pharmaceuticals (the latter funded by extension of a SIDA project). Training activities, including a national seminar, are also foreseen for 1986. Upon project completion the normal tripartite report will be prepared.

B. Co-operation at subregional, regional and interregional levels

16. Throughout the reporting period the ASTT has continued to maintain working relationships with a large number of bodies, organs and organizations of the United Nations system, as well as with a series of governmental and non-governmental institutions whose activities have a bearing on matters relating to technology. Efforts have been made not only in drawing on each others information or expertise, but also in ensuring mutually complementary activities in subject areas, programmes or projects of common concern or interest. The mechanisms and modalities of consultation and co-operation vary widely. The ASTT is closely involved in joint activities of the United Nations system as evolved in the context of the ACC Task Force on Science and Technology for Development and endorsed by the ICSTD. Activities of the ASTT relate to instances in which UNCTAD was designated lead agency, as well as to instances in which UNCTAD is one of the co-operating agencies on specific topics or issues of concern to several parties. 5/

17. Other forms of co-operation are determined by programme or project formulation and implementation mechanisms, either (i) by designing mutually complementary projects or programmes which are carried out independently, e.g. specific projects handled by the African or Asian Regional Technology Centre and those handled by ASTT, (ii) by evolving comprehensive projects to be co-ordinated by one agency or institution but implemented in co-operation with one or several associated agencies e.g. country projects for which UNIDO is executing agency in association with UNCTAD, (iii) by calling on each other's complementary substantive contributions, documentation and expertise on a case by case basis, e.g. seminars or working groups in which various technology-related aspects are examined on the basis of inputs provided by different institutions, one of which acts as convenor ensuring logistics and reporting, (iv) by establishing a broad framework of co-operation in the context of which specific activities would be designed and carried out, including suitable financing for these activities e.g. co-operation with the

Islamic Development Bank and Islamic Fund for Science and Technology for Development (IFSTAD); (v) co-operation and support regarding technology issues contributing to the work being carried out or sponsored by various subregional/regional groupings such as the Preferential Trade Area for Eastern and Southern African States (PTA), Southern African Development Co-ordinating Conference (SADCC), Communauté Economique de l'Afrique Occidentale (CEAO), Caribbean Community (CARICOM), Sistema Económico Latinoamericano (SELA), Junta del Acuerdo de Cartagena (JUNAC).

18. Criteria such as priority areas of the ASTT for assistance, type of co-operation, expertise or activities called for, timing, duration, geographical location, financing, and combination with other current activities obviously influence the nature and scope of ASTT's co-operation at subregional, regional and interregional levels. The institutions, bodies and organizations with which co-operation was maintained are mentioned at relevant parts of the present report in conjunction with ASTT's own activities.

19. Mention should also be made in this context of the important role played by UNDP, not only in financing of specific country or inter-country projects/programmes, but also in assisting in identifying requirements, and designing, formulating and implementing these projects/programmes in co-operation with countries and institutions/organizations concerned. The preparation of subregional, regional or interregional projects requiring inputs, assistance or co-operation from UNCTAD would be greatly facilitated if developing countries, individually and collectively, would also convey their wishes or support through UNDP offices.

Chapter III

DEVELOPMENT OF HUMAN RESOURCES, TRAINING AND INFORMATION EXCHANGE ACTIVITIES

20. During the reporting period, the ASTT has initiated, organized, participated in and/or provided inputs to a variety of programmes aimed at strengthening the human resource base and skill profiles of developing countries in dealing with technology issues. Activities have sought to ensure the exchange of experiences, information and documentation among countries, interested institutions and organizations, as well as among participants themselves. They have been carried out in close co-operation with various national, subregional, regional and international bodies, including those of the United Nations system. Substantive inputs and contributions covered a variety of topics, subjects or issues, as well as a diversity of financing sources, organizational modalities and degrees of involvement and/or association of the ASTT. Programmes ranged from large seminars, workshops and working groups to small in-house/on-job/in-field training programmes. These are described below.

A. Seminars, workshops and working groups

21. These comprised relatively large groups of participants and served as a means for the exchange of experience, information and documentation on technology matters, offering the possibility of discussing policy elements in a fashion which could assist decision-making, and opening up possible avenues for international co-operation.

22. An Interregional Seminar on policies for technology transfer and development was organized jointly by UNCTAD's ASTT and the Programme for Development Co-operation (PRODEC) of the Helsinki School of Economics. The seminar took place in Helsinki from 16 September to 4 October 1985. Its objectives were to provide 20 participants 6/ from all regions with an opportunity to study and examine modalities for the acquisition, transfer, utilization and development of technology and policy options relating thereto. A number of academic (i.e. University of Helsinki, Institute of Development Studies at the University of Sussex) and private and public sector institutions (i.e. Nordic Law Consultants, Union Bank of Finland, OVAKO, International Centre for Public Enterprises in Developing Countries, FINNIDA) participated in the seminar. A complete report was issued by PRODEC on the seminar. 7/ Co-operation with PRODEC dates back to 1980. Since then, it has evolved from an ad hoc arrangement into a coherent programme of seminars on techno-economic issues at micro and macro levels. An agreement lays the bases for jointly designing, planning and implementing these activities.

23. A Workshop on technology development and transfer was organized by the African Regional Centre for Technology (ARCT). It took place in Freetown, Sierra Leone, from 3 to 13 December 1985, with the co-operation from UNCTAD, ECA and UNCTC. Twenty officials from six African countries took part in it. 8/ Its objectives were to develop national capabilities in technology policy and planning. UNCTAD's contribution dealt primarily with modalities for the acquisition of technology. A report is being issued by the ARCT.

24. A Roundtable on Development: the Human Dimension was organized by UNDP in co-operation with the North-South Forum. It took place in Istanbul, Turkey, from 2 to 4 September 1985. It brought together 46 high-level experts from diverse developing and developed countries and institutions to identify requirements and possible modalities for the development of the human resource base in developing countries. UNCTAD's contribution dealt with the human dimension of technological change and possibilities of co-operation among developing countries in meeting this challenge. Technical papers and reports are being issued by the convenors.

25. A Joint ARCT/UNFSSTD Meeting on international co-operation for African Technological Development was organized by the African Regional Centre for Technology together with the United Nations Financing System for Science and Technology for Development in Rome, Italy, from 19 to 23 November 1984. Ninety high-level experts from African countries, France, Italy, the Netherlands, the United States and Brazil, and from the private or public sectors, the research community and other relevant science and technology related institutions were invited. The ASTT provided inputs with respect to international co-operation and training programmes being outlined in this Meeting, which was hosted by the Government of Italy.

26. The Workshop on technology policy and planning in the informal sector, the case of food, agriculture and energy in the East African Subregion was jointly organized by the African Regional Centre for Technology (ARCT), the Economic Commission for Africa (ECA) and the Foundation for Development of the Federal Republic of Germany. It took place in Addis Ababa, from 28 January to 8 February 1985. It addressed policy-makers and researchers who discussed modalities of diagnostic, policy-oriented analyses which would assist in evolving integrated technology strategies and plans and contribute to the mobilization of the informal sector. The ASTT contributed with substantive inputs and documentation on these sectors.

27. The Symposium on Commercialization of Indigenous Technology was organized by the Asian Productivity Organization (APO) with the National Productivity Council of India. It took place in New Delhi, India, from 7 to 11 October 1985 and the UNCTAD contribution dealt with issues regarding channels and mechanisms for the productive application and commercialization of R and D results.

28. A Panel on Information Systems for Science and Technology for Development, was organized by UNCSTD and hosted by the Government of Italy in Rome from 21 to 25 January 1985. Participants from national, regional and international governmental and non-governmental organizations, including UNIDO, FAO, UNESCO, ILO, UNEP, UNCTC, UNU, WIPO, IAEA and UNCTAD, examined existing national information systems on science and technology in developing countries, recent trends, and possibilities of linkages with United Nations information systems.

29. A contribution was made to an UNCTAD Interregional Workshop for Trade Representatives of Developing Countries Accredited to the German Democratic Republic, which took place in Berlin, 26-28 November 1985. It was organized by UNCTAD's Division for Trade with Socialist Countries in co-operation with the Ministry of Foreign Trade and the Chamber of Commerce of the German Democratic Republic.

30. Contributions on technology issues were made to seminars organized by the Centre de droit international, Université de Paris X, Nanterre, France (January 1986), the Université René Descartes, Paris, France (February 1986), and the University of Grenoble, Grenoble, France (March 1986).

31. A National workshop on technology, employment and development was organized by the Government of Mali in co-operation with ILO and substantive inputs from UNIDO, FAO and UNCTAD. It took place in Bamako, from 31 October to 7 November 1984. The ASTT contributed to the workshop with the presentation and discussion of a preliminary report on technology and development issues in Mali.

32. A Conference on technology issues took place in Abidjan from 22 to 25 November 1985, in conjunction with the Salon ivoirien de l'invention et de l'innovation (SINOVA) organized by the Government of Côte d'Ivoire. UNCTAD was requested to cover technology and development issues for a large group of participants coming from government, university and business executives.

33. Attention was devoted to contributing to and participating in national working groups comprising diverse economic agents, government departments and institutions concerned with technology matters, and/or representatives of the productive sectors, and academic and research oriented institutions, in order to assist in efforts for improved, coherent approaches of technology issues at the national and/or sectoral levels. These working groups may assume a more permanent or formal institutional character in the future. So far, the ASTT has participated in working groups in Kenya, Ghana, Togo, Zambia and Zimbabwe.

34. Three seminars/working groups are in an advanced stage of preparation, and are likely to take place before the end of 1986. These are, a national seminar on technology and development perspectives in the food processing sector which is scheduled to take place in Ethiopia; (ii) an interregional seminar on planning and administration of development projects is to be held in Helsinki, Finland, from 29 September to 17 October 1986, and (iii) a subregional seminar is scheduled to take place in Jeddah, Saudi Arabia, from 10 to 14 November 1986.

B. In-house, on-the-job and in-field training and exchange programmes

35. In-house, on-the-job and in-field programmes comprise small groups of participants with similar professional interests or background. These programmes address themselves to more detailed issues than would be possible in larger groups, and are designed to fit as far as possible the specific needs of participants and their country. This type of programme allows participants to benefit in a more flexible way from diversified sources of training, for example, from training provided in various developed and developing countries, public and private sector organizations, enterprises and academic institutions. The participants in these programmes prepare a paper dealing with the specifics of the respective programme, in close consultation and exchange of views with the UNCTAD staff, including also methodological questions. These programmes require great attention and are often substantively and organizationally complex. Within the limited amount of resources available to it during the reviewing period, the ASTT organized 13 of these programmes, providing specialized training to 27 officials from

Argentina, Benin, Sierra Leone, Ethiopia and Madagascar. Financing came from a variety of sources, in the majority of cases from UNDP or UNFSSTD financed projects, and in 3 cases from UNITAR. It would, however, be desirable to obtain specific voluntary contributions earmarked for this purpose in order to ensure that these programmes are periodically organized.

36. Contributions to the in-house, on-the-job and in-field programmes in terms of hosting facilities and resource persons during the reporting period were made by the developing countries themselves (Egypt and India) through governmental units, research institutions and enterprises, and by the developed countries through academic, development-oriented institutions (i.e. International Law Institute, Washington; Tropical Research Development Institute, University of Warwick and University of Sussex, United Kingdom) or through enterprises, and by organizations of the United Nations system itself (i.e. FAO). Similar offers to hosting facilities for ASTT training programmes were made by the Governments of Argentina, Brazil and Yugoslavia. All these efforts have been highly appreciated, although effective implementation largely depended on availability of resources for travel and per diem of participants to the host country.

Chapter IV

DIAGNOSTIC ANALYSES, OPERATIONAL TOOLS AND TRAINING MATERIALS

37. The activities of the ASTT require or result in the preparation of reports and documents of a diagnostic, analytical, methodological or operational nature. Such reports and documents are prepared with the close involvement of counterparts, focal points and project personnel. They also draw on the expertise and material available in UNCTAD and in the various co-operating institutions and organizations. Different types of documents are briefly described below.

A. General diagnostic analyses

38. These documents usually address policy issues and institutional structures, channels and mecanisms for the transfer, application and development of technology. They analyse policy orientations linking commercial acquisition from abroad and local generation and adaptation of productive technologies. On the basis of the analytical diagnosis of the overall setting for technology, they also put forward suggestions and recommendations for adjustments in policies and institutions to ensure that actions taken by various economic agents involved are complementary and mutually supportive. As it would be arbitrary to put forward uniform across-the-board solutions for countries with different technological profiles, resources and potential, the different reports reflect options and follow-up actions conducive to the technological transformation of the countries concerned. Two reports of this nature, 9/ one on Nepal (UNCTAD/TT/80) and one on Togo (UNCTAD/TT/82), were completed and issued during the reporting period. Three others covering Ghana, Mali and Zambia are under preparation in close co-operation with counterparts in these countries. They might be available before the end of 1986.

B. Sectoral diagnostic analyses

39. These reports contain analyses concerning sectors and areas of critical importance to the countries concerned. They provide a broad description of existing productive structures, technological capacities and relations to other sectors of the economy. They aim at identifying main problem areas and technological requirements associated with the inmediate consolidation and longer term development prospects of the particular sector or area dealt with. They also provide indications concerning the acquisition and development of technologies in order to meet these requirements. Whenever feasible, longer term programmes, including broad technological investment profiles, are also put forward. A report entitled "Considerations for the establishment of an information and documentation system on the transfer and development of technology in Ethiopia" (UNCTAD/TT/77) was issued in 1985. Two other reports of this nature, concerning respectively technology and development perpsectives of the metalworks and engineering goods sector, and the food processing sector in Sierra Leone have been submitted for publication. Three reports on technology and development perspectives in the pharmaceutical sector respectively in Lesotho, Sierra Leone and Zimbabwe are presently underway with the involvement of national focal points and diverse interested parties, including WHO.

C. Training material and operational tools

40. The documentation, findings and expertise resulting from the activities of the Technology Division, and the ASTT, not only provide methodologies and approaches for the analysis of technology issues, but also point towards a variety of relevant options and alternatives prevailing in different countries. Case histories, technical assistance oriented diagnostic analyses, reports, and studies are thus being used in a complementary fashion by government officials and practitioners dealing with techno-economic issues. Pertinent material is also used in the context of training and information exchange programmes, together with inputs made available by co-operating bodies and documentation prepared by participants themselves.

41. Many documents prepared earlier by the secretariat continue to be relevant as operational tools. 10/ Material, information and expertise are progressively being accumulated to serve as a basis for the preparation of supplementary practical instruments of immediate relevance for training purposes, practitioners and decision-makers in the field of technology. A methodological handbook for technology planners at micro or macro-economic levels is expected to be issued before the end of 1986. Material for the preparation of a manual concerning the encouragement of technological innovation in developing countries is also being accumulated within the Division, in continued feedback with the ASTT.

42. The substantive reports emanating from national, subregional/regional and interregional workshops, 11/ seminars, panels, etc. provide valuable indications, advice, guidance or recommendations of a pragmatic nature concerning techno-economic issues in the development perspective.

43. Mention should also be made of the documentation on issues such as the utilization of United Nations system-funded R and D results, the utilization of technologies in the public domain, technological interlinkages and co-operative arrangements among developing countries. Various preliminary reports 12/ continue to be relevant not only to the understanding of issues but also as practical guides or operational instruments for the orientation of policies and actions at various levels. Work and activities of the ASTT on these topics are also reinforcing the information base and methodological framework for the ASTT to provide assistance to developing countries in several of the priority areas outlined in Trade and Development Board resolution 308 (XXX).

44. Documentation prepared by or resulting from activities of the ASTT continues to be instrumental in (i) assisting end-users in identifying their needs and requirements and, hence, helping them in designing and formulating courses of action, including technical assistance project documents, for meeting these needs and requirements; (ii) assisting in the exchange of information and experiences among all countries, in particular the developing countries themselves; (iii) providing the diagnostic and analytical bases for widening the options of developing countries regarding sources of technology and mechanisms of transfer, co-operative arrangements and interlinkages at all levels, including supportive actions by developed countries; (iv) providing materials, inputs or contributions for the development of human resources and skills in matters relating to technology.

Chapter V

CONCLUDING REMARKS AND OUTLOOK

45. All efforts will continue to be deployed to meet the increasing requirements and requests of developing countries for technical and operational assistance in the field of technology within the purview of UNCTAD, giving due regard to priority areas outlined in Board resolution 308 (XXX). In order to effectively meet these responsibilities, further work and empirical analyses are required with respect to relatively new areas of concern; projects and programmes for the development of human resources and skills need to be given greater emphasis; functional activities of a sectoral nature need strengthening and reinforcement in support of advisory services, backstopping and training; financing for various projects and programmes in response to overall and sectoral requirements of developing countries has to be secured; and all possible modalities of co-operation in support of these projects and programmes will be explored and enhanced. The spectrum of issues, activities, financing, co-operation and implementation modalities covered by the ASTT will necessarily continue to be wide in order to meet the diversity of requirements of developing countries and to utilize all possibilities of responding to them.

46. In the immediate future, the ASTT will have to concentrate on already on-going activities, projects and programmes mentioned in various parts of the present report. Several new projects and requests are currently being processed and will have to be carried out accordingly. Activities relating to specific sectors and areas of critical importance to developing countries could be greatly expedited by the availability of additional expertise of a techno-economic nature. This would also facilitate diagnostic and analytical work and substantive back-up to sectoral training programmes. Activities relating to the development of human resources and skills would be greatly facilitated through the provision of extrabudgetary funds earmarked for training purposes. Requests and identified requirements relate to intercountry programmes (e.g. panels, seminars, workshops), as well as in-house, on-job and in-field training on a variety of issues and topics. Longer term co-operative arrangements, including agreed organizational modalities, substantive programmes, inputs and financing could also be evolved in this respect. Contributions towards the preparation of training materials and resource persons from developing countries would be most valuable. Subregional, regional and interregional projects and programmes, combining countries with similar needs or with complementary capacities are currently being evolved for extrabudgetary funding. Of particular concern is the development of an integrated proposal to finance advisory services and training on technology issues in support of the least developed countries.

47. While it is difficult to extrapolate on future requests or to forecast the availability of extrabudgetary resources, the ASTT will aim at continuity and balance in its activities, ensuring that they are mutually complementary and systematic. As could have been expected, the activities of the ASTT have been strongly influenced by the current crisis affecting the United Nations system. The outlook for the period ahead has to be viewed in terms of overall resources that would be harnessed in the light of paragraph 4 of Trade and

Development Board resolution 308 (XXX), which strongly urges that the Advisory Service on Transfer of Technology be provided with sufficient resources in accordance with paragraphs 11, 12 and 13 of resolution 17 (IV) adopted by the Committee on Transfer of Technology on 10 December 1982, to enable it to perform its function effectively, within its mandate, having regard to the increasing requirements of developing countries.

Notes

1/ The two most recent ones are documents TD/B/C.6/93 and TD/B/C.6/113, respectively prepared for the fourth and fifth sessions of the Committee on Transfer of Technology.

2/ Currently six; travel, consultant or other operational resources are not predetermined, which makes planning of activities rather complicated.

3/ This was made possible by extension of a SIDA financed project.

4/ The diagnostic report on pharmaceuticals was made possible by extension of a SIDA project.

5/ See document TD/B/C.6/137, chap. III.

6/ Participants came from Botswana (1), China (2), Colombia (1), Egypt (1), Guinea (1), Malaysia (1), Mexico (1), Nepal (1), Nicaragua (1), Peru (1), Philippines (1), Sierra Leone (1), Sri Lanka (1), Sudan (1), United Republic of Tanzania (1), Thailand (1), Viet Nam (2), Zimbabwe (1).

7/ See PRODEC/UNCTAD Seminar report: Policies for Technology Transfer and Development, Helsinki, 1985.

8/ Participants came from Liberia (4), Ghana (3), Nigeria (5), Egypt (1), Sierra Leone (6) and Gambia (2).

9/ Earlier reports related to Sri Lanka, Iraq, Ethiopia, Egypt, Burundi, Somalia, Rwanda and the United Republic of Tanzania.

10/ Guidelines for the Study of the Transfer of Technology to Developing Countries: a study by the UNCTAD secretariat (United Nations publication, Sales No. E.72.II.D.19) 1972; Handbook on the Acquisition of Technology by Developing Countries (United Nations publication, Sales No. E.78.II.D.15) 1978; "Common approaches to laws and regulations on the transfer and acquisition of technology", study by the UNCTAD secretariat (TD/B/C/91); "Planning the technological transformation of developing countries", (TD/B/C.6/50); study by the UNCTAD secretariat (United Nations publication, Sales No. E.81.II.D.10) 1981; "Technology policies and planning for the pharmaceutical sector in the developing countries", (TD/B/C.6/56); a report by the UNCTAD secretariat in co-operation with Dr. Nitya Anand, Director, Central Drug Research Institute, Lucknow, India. October 1980; Guidelines on Technology Issues in the Pharmaceutical Sector in the Developing Countries, (UNCTAD/TT/49) (United Nations publication, Sales No. E.82.II.D.15) 1982.

11/ See chap. IV below concerning these activities.

12/ "Commercialization of the results of United Nations system funded Research and Development" (TD/B/C.6/121); "Access by developing countries to technology in the public domain", (TD/B/C.6/122) report by the UNCTAD secretariat, 1984; "Interregional linkages and co-operative arrangements among developing countries for their technological transformation", (TD/B/C.6/118) report by the UNCTAD secretariat, 1984.